

**TITLE:** AUTOMATICALLY PREPARING STREAMING  
VIDEO PROGRAMMING GUIDES

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Date: May 31, 2000

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Background

This invention relates generally to streaming video available for download over the Internet.

0052300-003400  
007200-002850

5 A variety of streaming video formats are available for Internet download. Streaming video is video that may begin playback before being completely downloaded. Streaming video reduces the amount of time the user must wait before beginning to enjoy the media. Common streaming video formats include Real Networks, real video format, file extension .ram and Microsoft's Media Player format, file extension .ast. Generally the streaming media is played through a browser plug-in which may also be downloaded.

10 Because of the ease in preparing streaming videos and making them available over the Internet, an increasing number of streaming videos are available from a wide variety of sources. As a result there are a large number of streaming videos and a correspondingly large number of video sources, many of whom may be unrecognized. This proliferation makes it difficult for users to identify

15 available streaming videos that are of interest. For example, while one may enjoy streaming videos on a particular topic, there is no way for the user to know when a particular streaming video on that topic is available.

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Thus, there is a need for better ways to facilitate the viewing of streaming video.

#### Brief Description of the Drawings

Figure 1 is a depiction of a graphical user interface in accordance with one embodiment of the present invention;

Figure 2 is a flow chart for software in accordance with one embodiment of the present invention;

Figure 3 is a flow chart for software in accordance with another embodiment of the present invention;

Figure 4 is a front elevational view of a hardware implementation of one embodiment of the present invention; and

Figure 5 is a block diagram for hardware in accordance with one embodiment of the present invention.

#### Detailed Description

Referring to Figure 1, a streaming video programming guide may be implemented as a graphical user interface 22 displayed on a monitor or television screen associated with a processor-based system. The streaming video programming guide may arrange, for selection and viewing, a plurality of representation of streaming video files. These streaming video files are collected automatically by a search engine that automatically and periodically searches the Internet. The user may provide a plurality of categories of topical interest to the user. The search

engine then searches the Internet for streaming video file of interest to a user, for example by using keyword searching.

When appropriate streaming video files that satisfy  
5 the criteria set by the user are located, those video files may be identified in the graphical user interface 22 using video thumbnail frames 18, titles 23, and other information 20, 24, 26, 28 and 29 culled from the web site offering the streaming video file for downloading. All of this  
10 information may be displayed in a chart format as shown in Figure 1 for selection by the user.

More specifically, the user may select video files for viewing in a variety of different categories. The user may also input keywords that are utilized by a search engine to  
15 assemble the graphical user interface 22. For example, in the illustration in Figure 1, the user has provided the keywords "current news", "sports", and "Celine Dion" as topics of interest for viewing streaming videos. In the organization shown in Figure 1, each of the topics or  
20 category icons 16 identify a series of three streaming video files that are responsive to the user-provided keywords. Thus, each responsive streaming video file may be represented by a thumbnail frame 18, a title 23 or other descriptive material 20, as well as the type of the file  
25 extension 26, the web site sponsoring the streaming video as indicated at 28, and the available connection speed 29.

In addition, quantitative information 24 about the streaming video may be provided. In the case of the streaming video represented by the thumbnail frame 18, the video file is in a 240x180 pixel format and lasts for  
5 twenty-eight seconds.

Sufficient information is provided about each of the identified streaming video files to allow the user to determine whether or not the user wishes to view the material. Based on the thumbnail frame 18, the title 23,  
10 the length and the file extension 26, the user may decide whether or not to view the material. In one embodiment of the present invention, the user can simply click on any of the identified items including the thumbnail frame 18 and the title 23 to automatically play the video file in place  
15 of the graphical user interface 22. In addition, in some embodiments of the present invention, a video file may be played initially within the thumbnail frame 18.

If the user finds that none of the depicted set of video files in a given category is of interest, the user  
20 can click on the category icon 16 to display the next series of video files in place of the currently displayed video files. Moreover, in some embodiments of the present invention, if the user clicks on the category icon 16, the entire interface 22 may be converted to a display of video  
25 files pertinent to that category. Thus, if the user mouse clicks on the sports icon 16, the current news and Celine

Dion video files may be removed from the graphical user interface 22 and replaced with additional video files in the sports category.

5 Generally, the streaming video files are provided by web sites that also provide descriptions of those video files. The descriptions may include textual material about the particular streaming video files. In addition, descriptive metatags may be provided. Finally, the search engine may search for the particular file extensions  
10 associated with streaming video files such as .ram and .ast.

007E50 202E50  
15 The user can also limit the search done by the search engine to video files in a particular language as indicated by the icon 12. The user can input the desired language using a selection box associated with the icon 12. In addition, the user can limit the search for video files to a given location. In such case, the search engine may search for information in textual form associated with the streaming video files that provide information sufficient  
20 to determine the location involved. For example, the textual material accompanying the video may identify key words representative of a given location, such as zip codes, state names or other geographical information.

25 The search engine may search for a combination of file extensions and key words that correspond to streaming video files having the content requested by the user. The

information may then be parsed into the categories as requested by the user, such as the current news, sports and Celine Dion category icons 16 in the illustrative graphical user interface 22.

5           In a compile mode, the search engine may search for video files, as described above, using the software 32 in one embodiment of the invention shown in Figure 2. The compile mode may occur at regular intervals so that the search engine periodically searches for the videos in the  
10       desired categories. Alternatively, the search may be conducted at the time when the user selects the streaming video programming guide.

          The search engine searches for video files and related keywords, metatags, connection speeds and file extensions  
15       as indicated in block 34. Any responsive video files are then categorized based on key words as indicated in block 36. The video files are then organized according to categories as indicated in block 38. Finally, the graphical user interface 22 is displayed with  
20       representations of each of the video files that were located, organized in a grid format as depicted for example in Figure 1 and as indicated in block 40 in Figure 2.

          The user may select the video for viewing by mouse clicking on its title 20 or thumbnail frame 18. In  
25       addition, the user can link to the web site offering the

video by clicking on the web site uniform resource locator  
28.

In a set-up mode implemented by software 82 in one  
embodiment, the user can specify the search criteria for  
5 the compiled software 32 as indicated in Figure 3. The  
user may specify the file formats as indicated in block 84.  
For example, the software 82 may provide a graphical user  
interface that asks the user to input a streaming video  
file format such as .ram or .ast or to search for all file  
10 formats.

Next, the user is asked to specify topical keywords as  
indicated in block 86. The topical keywords then become  
the category icons 16 in the resulting graphical user  
interface 22. In one embodiment of the present invention,  
15 the user may provide an overall keyword that becomes the  
category icon 16 and may also provide additional keywords  
to further refine the search to obtain the material that  
the user in fact is actually interested in.

The user may also specify a minimum connection speed  
20 as indicated in block 89. Some users may prefer not to  
view files from sites with slow connection speeds. Also,  
the user may input the user's connection speed so that the  
file with the corresponding connection speed may be  
automatically selected if available.

25 Next, the user is called upon to set tags as indicated  
in block 88. The tags may be information about particular



items of interest to the user. For example, the user may only be interested in getting information on particular web sites, information of a specific duration, or information provided by specific types of sources that may be provided for example by metatags.

Next, the user is called upon to specify the language of the streaming video as indicated in block 90. Finally, the user may be asked to specify a location that may be utilized in narrowing the search still further. The user may provide states, cities, countries or zip codes which may be searched for by the engine to locate geographically relevant material as indicated in block 92.

Once all the appropriate entries in the graphical user interface have been filled out, the information is automatically stored (block 94) for automatic development of the graphical user interface 22 and to automatically implement the desired search. That is, the search terms are plugged in as the category icon 16 titles.

The graphical user interface 22 shown in Figure 1 may be used with a variety of processor-based systems including, but not limited to, desktop computers, laptop computers, appliances such as telephones and Internet appliances, and the like. In one embodiment of the present invention, shown in Figure 4, the set-top box 42 may be coupled to a television receiver 136. The set-top box 42 conveniently sits atop the television receiver 136--ergo,

the name set-top box. The television receiver 136 may include a display screen 138 that displays the graphical user interface 22.

Both the set-top box 42 and the television receiver  
5 136 include infrared interfaces 134 and 140 respectively. A remote control unit 44 may include its own infrared interface 45 for interacting and controlling the television receiver 136 and the set-top box 42. Thus, inputs provided through the remote control unit 44 may be provided over a  
10 wireless interface, such as a radio frequency interface, to the interfaces 134 and 140. The wireless signals appropriately control the set-top box 42 and the television receiver 136. The user can implement mouse-like cursor commands through the cursor controls 46 which include a  
15 plurality of directional buttons and a select button. In addition, channel entries may be entered through channel keys 48.

Referring next to Figure 5, the set-top box 42 may include a processor 50 coupled to a bridge 52. The bridge  
20 52 couples a bus 56 and the system memory 54. Also coupled to the bus 56 are a display controller 64, a television tuner/capture card 62 and an additional bridge 58. The display controller 64 may be coupled to the television receiver 136. The television tuner/capture card 62 may be  
25 coupled to an appropriate source of video such as a

broadcast antenna, a satellite receiver or a cable connection.

5 The bridge 58 may be coupled to a hard disk drive (HDD) 60 that stores the software 82 and 32. In addition, the hard disk drive 60 may include a database that stores information about the selected categories for search, search terms, and the information located in an appropriate search.

10 In one embodiment of the present invention, the search may be actually implemented by the software 82 and 32 stored on the hard disk drive 60. In other embodiments, the search is actually implemented by a web server that is automatically called up over the Internet when the search is requested.

15 The bridge 58 couples a bus 68. The bus 68 is coupled to a basic input/output system (BIOS) 70 and the interface 134. The interface 134 implements a wireless interface with an interface 45 associated with the remote control unit 44. The remote control unit 44 includes the interface  
20 45 and a controller 72 that receives keypad inputs and translates them into appropriate signals for transmission to the interface 134.

25 While the present invention has been described with respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended

claims cover all such modifications and variations as fall within the true spirit and scope of this present invention.

What is claimed is:

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